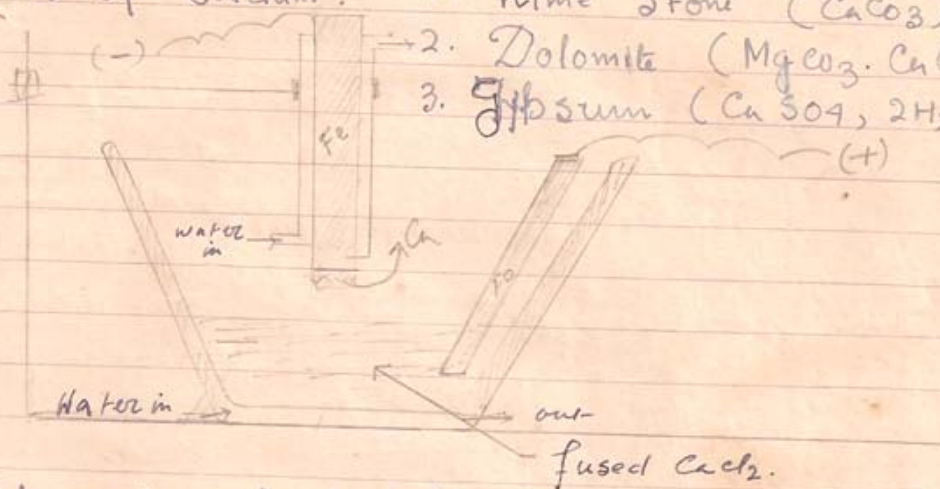




- Qr. Write notes on:
1. Plaster of Paris.
 2. Bleaching powder.
 3. Slaked lime.
 4. fused CaCl_2 .

Detection of Calcium in Salt test.

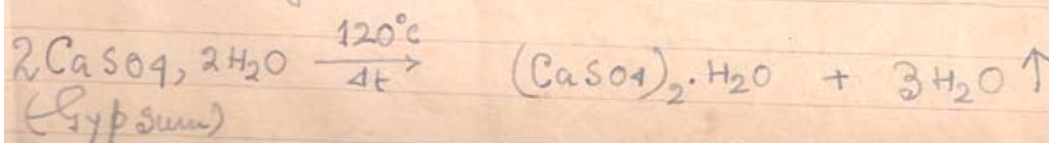
- Ques of Calcium:
1. lime stone (CaCO_3)
 2. Dolomite ($\text{MgCO}_3 \cdot \text{CaCO}_3$)
 3. Gypsum ($\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$)



Calcium is extracted by the electrolysis of fused/molten CaCl_2 where by calcium is obtained at cathode. As shown in the figure.

1. Plaster of Paris [$(\text{CaSO}_4)_2 \cdot \text{H}_2\text{O}$]

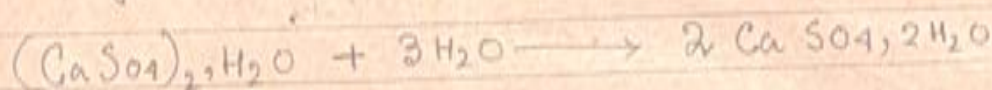
Preparation: It is manufactured in industry by heating gypsum in a kiln (K) at 120°C (exactly) as at higher temperature all the water of crystallization go and it becomes "dead burnt" which does not function for plastering. During heating no carbon should be present otherwise gypsum may partly change into CaS .





Properties

It is a white powder it forms a hard mass with water this is known as setting of plaster of Paris. It is due to the re-hydration and re-conversion into gypsum.



Uses of Plaster of Paris

1. It is mainly used in hospital for surgical bandages.
2. For making statues.
3. For glazing of paper. It is mixed with the raw material of paper.
4. As a chalk pencil.
5. As a cement in ornamental casting.

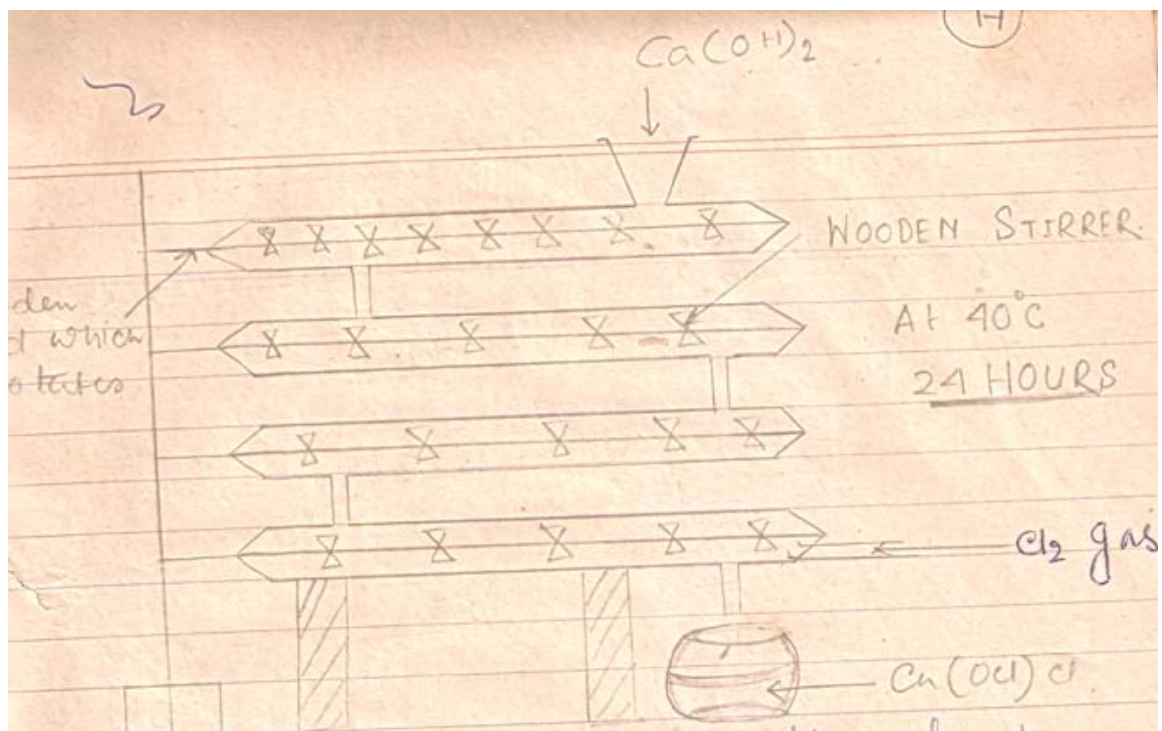
Bleaching Powder: $[\text{Ca}(\text{OCl})_2]$

Preparation: It is prepared by passing Cl_2 gas through $\text{Ca}(\text{OH})_2$, slaked lime at nearly 40°C



Slaked lime is spread upon the floor of a chamber provided with wooden staves. Dry Cl_2 gas (free from HCl) is passed into mix with $\text{Ca}(\text{OH})_2$ at 40°C for about 24 hours. Bleaching powder thus obtained is kept in wooden drum for marketing.

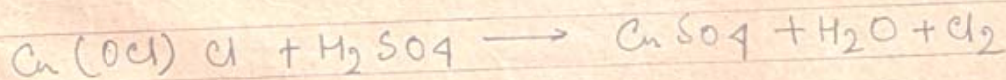
Calcium



Properties: It is a white amorphous powder which smells strongly of chlorine. It gradually loses chlorine when exposed to the air. With water bleaching powder gives CaCl_2 and calcium hypochlorite.



With $\text{H}_2\text{SO}_4 \rightarrow$ It gives Cl_2 gas.



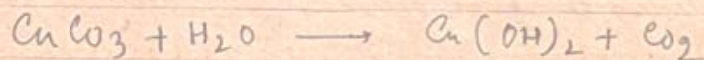
Uses

1. It is mainly used for bleaching cotton clothes.
2. For purifying drinking water.
3. As a disinfectant.

Calcium



2.



3.

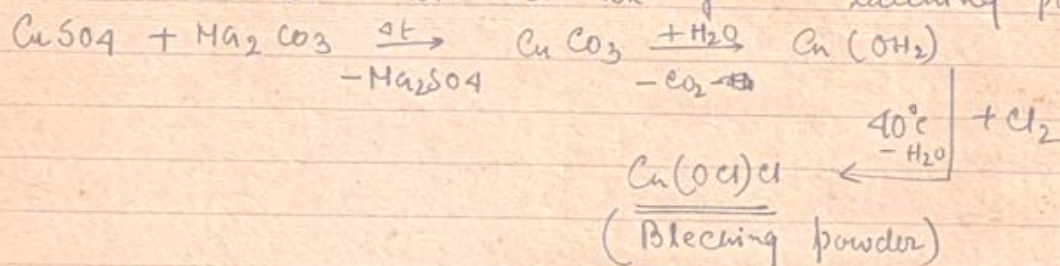


4. With HCl →



5.

6. from CuSO_4 → By heating it with Mg_2CO_3 we get CuCO_3 and this is added with water to get slaked lime and when Cl_2 gas is passed through $\text{Cu}(\text{OH})_2$ at 40°C about 24 hrs. we get bleaching powder.



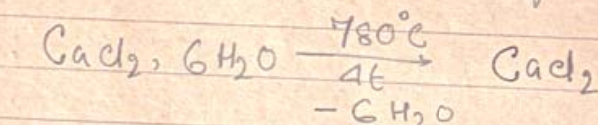


3. Slaked lime: When quick lime (CaO) is added with little water it chemically combines with water, hissing sound is produced, much heat is generated (exothermic), A portion of water escapes as a steam. On adding more water it swells (), cracks and becomes white powder this powder is called Slaked lime and the process is known as slaking of lime.

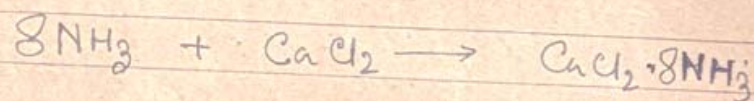
$\text{CaO} + \text{H}_2\text{O} \longrightarrow \text{Ca}(\text{OH})_2$
Used for white washing, to prepare lime water used in lab.

4. Fused Calcium:

Preⁿ: When $\text{CaCl}_2 \cdot 6\text{H}_2\text{O}$ is strongly heated we get a white mass known as fused CaCl_2 .



Properties: It is white hygroscopic (absorb water) so it is used for drying gases but ammonia is not dried by it as it reacts.



Uses

1. For drying gas and Organic Compounds.
2. A mixture of CaCl_2 and snow has a temp^r of -54°C
3. It is spread on pitch road to prevent from dusting.



Test of Ca^{2+} in Salt test

Dry test

Flame test: A platinum wire dipped in Conc. HCl, touched with the salt and put at the top of oxidising flame it gives a brick red flame.

Wet test

Salt solution is added with NH_4Cl , NH_4OH and $(\text{NH}_4)_2\text{CO}_3$ (soln), we get white ppt of CaCO_3

Qr

R.V Starting from CaSO_4 , How can you prepare.

1. CaCO_3

2. Slaked lime.

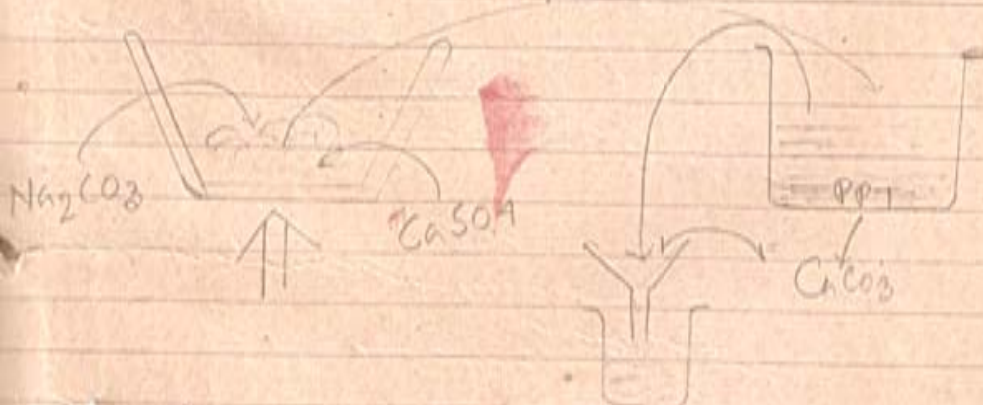
3. Lime water.

4. CaCl_2

5. $\text{Ca}(\text{NO}_3)_2$.

6. Bleaching powder

Give the outline only.



On heating strongly with Na_2CO_3 and by dissolving in water we get - the ppt of CaCO_3 , which is filtered out.

